Vitamin E, for Listeria-Free Turkeys

Researchers have found that adding vitamin E to poultry diets may reduce incidence of *Listeria monocytogenes,* a major foodborne bacterial pathogen found in poultry products. It causes listeriosis, a disease that mainly affects pregnant women, newborns, and individuals with weakened immune systems. In the United States, about 2,500 cases of human meningitis, encephalitis, sepsis, fetal death, and premature birth are attributed to *L. monocytogenes* annually.

Turkeys require vitamin E for normal development and immune system function. Supplementing their diets with vitamin E has been found to boost white

SCOTT BAUER (K7038-1)

blood cells, stimulating the birds' immune responses and helping them clear *L. monocytogenes* from their guts. It also enhances quality and shelf life of poultry meat. Scientists with the University of Arkansas and Iowa State University have been cooperating in this research. Testing of vitamin E against two other foodborne pathogens, *Salmonella* and *Campylobacter,* is being planned. *Irene V. Wesley, USDA-ARS National Animal Disease Center, Ames, Iowa; phone (515) 663-7291, e-mail iwesley@nadc.ars.usda.gov.*

What Next? Edible Adhesives!

That's right. And they can be readily made from sugar that's combined with water and organic acids. Boiling makes the sugar and acids bond, or cross-link, forming a dark-yellow adhesive. What's such an adhesive good for? Well, it was developed by ARS for use by a beverage packing company interested in a strong, fast-curing adhesive that could bond drinking straws to a special holder that would be placed in drink containers before filling and sealing. Then the bond would dissolve in an even, controlled manner, so that the straw would be free to rise when the beverage is opened.

Researchers chose sugar as an ingredient for this edible adhesive because it's familiar, inexpensive, readily available, and already used in beverages. They tried 10 different sugars and 12 organic acids. Tests produced adhesives that bonded to cloth, glass, leather, metal, paper, plastic, and other materials. When exposed to liquids, the adhesives dissolved within 20 to 60 minutes, depending on the formulation. With several other potential applications, these edible adhesives have been patented. *Sevim Z. Erhan, USDA-ARS Food and Industrial Oils Research Unit, Peoria, Illinois; phone (309) 681-6532, e-mail erhansz@ncaur.usda.gov.*

Prebiotics as Intestinal Soothers

Each year, about 10 million Americans require hospital care for a variety of gastrointestinal problems. In Europe and Asia, consumers are buying prebiotic products formulated to boost populations of *Bifidobacterium* bacteria and other microbial colonists of the human gut. Prebiotics are complex carbohydrates—oligosaccharides, such as inulin and short-chain sugars. They pass, undigested, from the lower intestine to the colon, where beneficial bacteria consume them, releasing vitamins, minerals, and nutrients. They may also curb the growth of food pathogens such as *Salmonella* by changing the colonic environment.

An enzyme-based process for making alternan—a promising potential bulking agent for low-calorie, high-fiber foods—has also yielded oligosaccharides that stimulate growth of *Bifidobacterium.* A patent is being sought to cover the synthesis and potential use of some of the prebiotics as food and feed additives. *Gregory L. Cote, USDA-ARS Fermentation Biotechnology Research Unit, Peoria, Illinois; phone (309) 681-6319, e-mail cotegl@ncaur.usda.gov.*

Soy Bread Would Put More Protein in Your Sandwich

Taste is what's kept many consumers from buying soy-based breads, but an improved dough formulation may change that. It will let bakers use soy flour to enrich the protein content of bread while minimizing its beany aftertaste. All it took was finding the right ratio of defatted soy flour to whole- and white-wheat flour. Researchers also added different amounts of ascorbic acid, salt, sugar, milk, water, and vegetable shortening, along with active dry yeast. They found that the yeast, plus extra sugar and ascorbic acid, significantly reduced soy's beany aftertaste.

Trained taste panelists have judged the soy-enhanced breads and found them comparable to all-wheat breads, though slightly more dense. But loaves made with 30-40 percent soy flour contain 112-127 grams of protein, compared to 65 grams for wheat bread. Plus, they meet recommended daily values for protein, fat, and carbohydrates and are naturally high in total dietary fiber and heart-healthy compounds such as isoflavones. Soy bread could be baked commercially for about 50 cents a loaf, making it especially useful in food-assistance programs. *Randal L. Shogren, USDA-ARS Plant Polymer Research Unit, Peoria, Illinois; phone (309) 681-6354, e-mail shogrerl@ncaur.usda.gov.*